APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,831	03/05/2002	Seung-Joon Yang	1293.1312	4781

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EXAMINER
BAYAT, ALI

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 05/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	**Applicant(s)**
Office Action Summary	10/087,831	YANG ET AL.
	Examiner	**Art Unit**	
	Ali Bayat	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _14 March 2005_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-20_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-20_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _05 March 2002_ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

Response to Arguments

1.   Applicant's arguments filed on 3/14/05 have been fully considered but they are

not persuasive. On page 7 lines 1-2, of Applicant's remarks, Applicant argues that there

is no histogram frequency distribution associated with the Kim mappers much less

performing histogram equalization.

Examiner disagrees Kim provides for histogram equalization, see Fig.4. Fig is a

detailed block diagram of the contrast enhance based on mean-separation histogram

equalization having gain control and brightness compensation, further see col.9 lines

50-51).

On page 7 lines 19-20 of Applicant's remarks, Applicant argues that Liou does

not discuss producing an estimation using a Gaussian model much less tech or suggest

same.

Examiner disagrees Liou provides for an estimation using a Gaussian model see

col.9 lines 60-65.

On page 7 lines 23-25, of Applicant's remarks, Applicant argues that Kim does

not disclose the feature of the invention. That is determining the degree of enhancement

of the contrast and calculating CDF based on an error function are not disclosed by Kim

Examiner disagrees col.8 lines 62-67 of Kim provides determining the degree of

enhancement of the contrast, see Fig.4. Fig is a detailed block diagram of the contrast

enhance based on mean-separation histogram equalization having gain control and

brightness compensation, further see col.9 lines 50-51, Further Kim provides for

calculating CDF, Fig.4 element 308.

On page 7 lines 32-33 of Applicant's remarks Applicant argues that Liou does not disclose calculating a CDF using an error function.

Examiner disagrees Liou for estimating the unknown parameter by using the frame difference signals (error function) at pixels location (i, j) follows a zero-mean Gaussian distribution with variance q2 ij. Col.9 lines 60-67.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liou et al. (US 5,835,163) in view of Kim (US 6,078,686).

In regard to claim 1, Liou provides for a model parameter estimator estimating parameters from the image using a Gaussian model (col.9 lines 60-65); and error function storing unit storing function values based on a Gaussian distribution (col.9 lines 60-65, note frame difference signals that corresponds to error function storing unit); Liou does not provide expressly for a CDF calculator calculating a CDF using one of the error function values from the error function storing unit and the estimated parameters;

and a histogram equalizer performing histogram equalization using the CDF. Kim

provides for a CDF calculator calculating a CDF using one of the error function values

from the error function storing unit and the estimated parameters (Fig.4 element 308,

col.8 lines 62-67); And a histogram equalizer performing histogram equalization using

the CDF (Fig.4 element 312, col.9 line 19-28). The prior art of Liou et al. and Kim are

combinable because they are from the same field of endeavor (detecting a cut in video

and image quality enhancement). At the time of the invention, it would have been

obvious to a person of ordinary skill in the art to incorporate the teaching of Kim with the

system and method of Liou et al. because the invention of Kim relates to image quality

enhancement, and more particularly, to image quality enhancing circuit having functions

such as noise reduction, contrast enhancement based on histogram equalization (col.1

lines 5-9 of Kim).

With regard to claims 2,9,12 and 18, Liou provides for a model parameter

modifier modifying the estimated parameters and outputting modified parameters to the

CDF calculator (col.9 lines 60-65).

As to claim 3, Liou provides for an apparatus, wherein the parameters by the

model parameter estimator comprise a mean and a variance (col.9 lines 60-65).

In regard to claims 4 and 16, Liou provides for an apparatus, wherein the CDF

calculator calculates the CDF using an error function value from the Gaussian

distribution comprising a zero mean and a unit variance (col.9 lines 60-65).

As to claims 5,8 and 13, provides for an apparatus, wherein the error function-

storing unit comprises a look-up table (col.21, note table 1).

With regard to claims 6 and 17, Liou provides for an apparatus, wherein the error function storing unit stores the error function values with a zero mean and a unit variance col.9 lines 60-65).

As to claim 7. See rejection of claim 1 above. It recites similar limitations as claim 7. Except for a model parameter estimator estimating parameters comprising mean and variance, from the image using a Gaussian model (col.9 lines 60-65); and error function storing unit storing function values based on a Gaussian distribution with a zero mean and a unit variance (col.9 lines 60-65, note frame difference signals that corresponds to error function storing unit). Hence it is similarly analyzed and rejected.

With regard to claims 10 and 14, Liou provides for an apparatus, wherein the model parameter modifier modifies the mean to adjust brightness of the iamge and modifies the variance to adjust contrast of the image (col.3 lines 19-21).

In regard to claim 11, Liou provides for a model parameter estimator estimating parameters comprising mean and variance, from the image using a Gaussian model (col.9 lines 60-65); and error function storing unit storing function values based on a Gaussian distribution (col.9 lines 60-65, note frame difference signals that corresponds to error function storing unit). Liou does not provide for CDF calculators calculating CDF using the parameters from the molded parameter estimator and the error function values from the error function storing unit; and an image segmentation unit segmenting the image into subimages having a Gaussian distribution; and histogram equalizers performing histogram equalization on the subimages provided from the image segmentation unit using the CDFs calculated by the CDF calculators. Kim provides for

CDF calculators calculating CDF using the parameters from the model parameter estimator and the error function values from the error function storing unit (Fig.4 element 308, col.8 lines 62-670; and an image segmentation unit segmenting the image into subimages having a Gaussian distribution (Fig. 4 element 306); and histogram equalizers performing histogram equalization on the subimages provided from the image segmentation unit using the CDFs calculated by the CDF calculators (Fig.4 element 312, col.9 lines 19-280. The prior art of Liou et al. and Kim are combinable because they are from the same field of endeavor (detecting a cut in video and image quality enhancement). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Kim with the system and method of Liou et al. because the invention of Kim relates to image quality enhancement, and more particularly, to image quality enhancing circuit having functions such as noise reduction, contrast enhancement based on histogram equalization (col.1 lines 5-9 of Kim).

With regard to claim 15. See rejection of claim 1 above. It recites similar limitation as claim 15. Hence it is similarly analyzed and rejected.

As to claim 19. See rejection of claim 11 above. It recites similar limitation as claim 19. Hence it is similarly analyzed and rejected.

In regard to claim 20. See rejection of claim 7 above. It recites similar limitations as claim 20. Hence it is similarly analyzed and rejected.

Conclusion

3.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Contact Information

4.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Ali Bayat whose telephone number is 571-272-7444.

The examiner can normally be reached on M-F 9:00-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number

for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

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5/23/05

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